CHAPTER 15

The Accademia del Cimento and the Royal Society

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In his expansive assessment of the century of Louis XIV, Voltaire paid subtle homage to the Accademia del Cimento. After singling out Sir Francis Bacon as the person who "had shewn, but at a distance, the track which might be followed," and Galileo as the discoverer of the law of falling bodies, Voltaire credited Descartes with the successful dismantling of the chimeras of scholasticism—albeit by introducing new ones. It was from the ruins of both chimeras, Voltaire concluded, that reason ultimately emerged. The Accademia del Cimento, in particular, through its demonstration that "it was not possible to comprehend any thing about the grand fabric of nature, but by examining her minutely," stimulated this burgeoning worldview. Voltaire went on to imply that the Royal Society took over from where the Cimento left off, its members vastly expanding the boundaries of scientific knowledge, and thereby inspiring the French to follow suit. Voltaire was not alone in detecting a similarity of purpose and method between the Florentine, London, and Paris Academies. D'Alembert made a similar historical linkage in the *Encyclopédie* article "expérimental," wherein he expounded on the imperceptible "spirit of experimental physics that Bacon and Descartes had introduced." The Cimento academicians, followed by Boyle, Mariotte, and others later, successfully performed numerous experiments, and the new scientific academies "seized with eagerness this manner of philosophizing."[1]

Such retrospective appreciation echoed contemporary sentiments. As early as 1667, Geminiano Montanari reflected on the genealogy of influence in the preface to his narrative of the experiments on capillarity that he had performed before the newly founded Accademia della Traccia. Therein Montanari conjoined explicit Baconian methodology with lavish praise of the Cimento, which he hailed as "supreme in Europe, heir to the tradition of Galileo, and a model to all academies north of the Alps, so much so that 'in

[1]Voltaire, *Works*, trans. Tobias Smollett et al., 37 vols. (London, 1761–1770), 8: 239–40; Denis Diderot and Jean Lerond d'Alembert, *Encyclopédie ou Dictionnaire raisonné des sciences, des arts et des métiers, par une Société de Gens de lettres*, 17 vols. (Paris, 1751–72), 6:299.

France, England, Holland and many other places experimental philosophy flourishes in imitation of the Tuscan academy.'" Appropriating such rhetorical flourish for his éloge of Leopoldo de' Medici, the Cimento's founder, Lorenzo Magalotti proclaimed as a matter of fact that it was "in imitation" of the Florentine Academy that similar institutions proliferated. In fact, continued its former Secretary, by embracing the Cimento's eschewal of sophistry and opinion in favor of experience and demonstration, all Italian and transalpine bodies could truly be regarded as "colonies of the Florentine Academy."[2]

Understandably, the English did not see matters in quite the same light. True, Sir John Finch—one-time professor of anatomy in Pisa, and later Charles II's Resident at Florence—did flatter Leopoldo in January 1661 with the news that that an experimental Society, modeled on the Prince's Academy, had just been established in London. It is equally true that during the historic meeting of 28 November 1660 that gave birth to the Royal Society, the individuals present expressed a specific desire to institute "a more regular way of debating things . . . according to the manner in other countries."[3] Nevertheless, the original fellows were fully cognizant of the vibrant local tradition of private meetings that stretched back to 1645, thus predating most Continental voluntary associations. Claiming priority, then, became a matter of national (and institutional) pride. But the very determination to do so, I believe, indicates a shared perception by seventeenth-century Italian, English, and French savants that they had much in common.

Before elaborating on such seeming homogeneity, however, I find it necessary to consider an influential interpretation that challenges the very possibility that the Cimento and the Royal Society were in any way related—in other words, the very presumption that the Cimento even resembled a "modern" scientific organization, or that its proceedings were informed by the same methodology that informed the work of the Royal Society. For all intents and purposes, so the argument goes, the Cimento was an expression of princely "whim": an illusory institution conjured into existence by Grand Duke Ferdinando and Prince Leopoldo for purposes *other* than the pursuit of science for its own sake. More specifically, the Cimento is perceived as an instrument of state, a propagandist stunt staged by the Medici brothers in order to aggrandize the Tuscan Court by conveying the impression of its continued advocacy of the Galilean legacy. To support such a reading, it has been pointed out that,

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[2]Geminiano Montanari, *Pensieri fisico-matematici sopra alcune esperienze fatte in Bologna nell' Academia Filosofica* (Bologna, 1667), 5–6, cited in Marta Cavazza, "Bologna and the Royal Society in the Seventeenth Century," *Notes and Records of the Royal Society of London*, 35, (1980):105–23, at 106; Angelo Fabroni, *Lettere inedite di uomini illustri*, 2 vols. (Florence, 1773–1775), 1:3.

[3]BNCF MS. Gal. 276 fol. 2v, translated in W. E. Knowles Middleton, *The Experimenters: A Study of the Accademia del Cimento* (Baltimore: Johns Hopkins University Press, 1971), p. 287; Thomas Birch, *The History of the Royal Society of London*, 4 vols. (London, 1756–1757), 1:3.

in contrast to other national academies, the Cimento was never granted a legal charter, or even a set of rules; indeed, it lacked any discernable structure. Nor were its members—all of whom were already on the Medici payroll—granted a say in determining the nature of the Academy's work or its administration, or, for that matter, permitted to assume the title of academician in their respective publications. And just as the Cimento was created by fiat, so, too, the prince summoned (or dismissed) his academicians at will. Small wonder, then—in this reading of events—that the publication of the *Saggi di naturali esperienze* rendered the very existence of the Academy superfluous. Once a tangible product had been delivered, the Cimento had outlived its purpose.[4]

I find such an interpretation problematic, and quite often at odds with the evidence. To cast the Cimento in a purely decorative light is to ignore the undeniable passion for science that characterized the lives of the Medici brothers for at least two decades prior to the opening of the Cimento. As Francesco Redi observed in 1664, when Ferdinando found the time to set aside the more serious affairs of state, he delighted in scientific pursuits, "not for vain and idle diversion, but rather to find in things the naked, pure genuine truth." Even more significant, Redi continued, was the manner in which Ferdinando, "with regal and tireless liberality," continuously supported "many talented men with all the facilities that are necessary to arrive at such a praiseworthy end."[5] As for Leopoldo, during the late 1630s he established private literary and philosophical academies in both Siena and

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[4]Paolo Galluzzi, "L'Accademia del Cimento: 'Gusti' del principe, filosofia e ideologia dell'esperimento," *Quaderni storici*, 48, (1981):788–844. Galluzzi's study spawned more outlandish attempts to reduce the science of the Accademia del Cimento—and of the Tuscan Court more generally—to little more than the preoccupation with status, theatrics, and patronage. Jay Tribby, for example, posits that "experiments based in or sponsored by courts during much of the seventeenth century proceeded according to a local logic of practice, a social or cultural logic that derived in large part from the pretensions and aspirations of the specific courts that sponsored them and the individuals who performed them." Insofar as the Medici-sponsored experiments were concerned, he continues, they necessitated "keeping palates, intestines, languages, and reputations as clean as a whistle" which reflected "local realities." "Dante's Restaurant: The Cultural Work of Experiment in Early Modern Tuscany," in *The Consumption of Culture: 1600–1800*, eds. Ann Bermingham and John Brewer (London: Routledge, 1991), 319–37, at 321. See also Jay Tribby, "Of Conversational Dispositions and the *Saggi*'s Proem," in *Documentary Culture: Florence and Rome from Grand-Duke Ferdinand I to Pope Alexander VII*, eds. Elizabeth Cropper, Giovanni Perini, and Francesco Solinas (Bologna: Nuova Alfa, 1992), pp. 379–90; Mario Biagioli, "Scientific Revolution, Social Bricolage, and Etiquette," in *The Scientific Revolution in National Context*, eds. Roy Porter and Mikulas Teich (Cambridge: Cambridge University Press, 1992), 11–54, esp. 25–32; "Etiquette, Interdependence, and Sociability in Seventeenth-Century Science," *Critical Inquiry*, 22, (1996):193–238; Paula Findlen, "Controlling the Experiment: Rhetoric, Court Patronage and the Experimental Method of Francesco Redi," *History of Science*, 31, (1993): 35–64.

[5]*Francesco Redi on Vipers*, trans. Peter K. Knoefel (Leiden: Brill, 1988), p. 3.

Florence. In 1641 he became a member of the Accademia della Crusca, and proceeded to take an active part in its role. Leopoldo was renowned for his "accessibility and dislike of flattery," so much so that many people in his circle "thought they could speak freely" with him. Certainly, he carried such traits into the Cimento, and the Academy indeed exhibited only a modicum of ceremoniousness, with Leopoldo taking an active part in both experiments and discussions—tolerating not only heated debates among the academicians but allowing himself to be contradicted by Giovanni Borelli. As Magalotti summarized in 1664, embracing the exemplary role of a judicious and committed patron, Leopoldo "likes to act as an academician, and not as a prince. He is content to play the second role only on occasions when there is a question of expense, generously supplying the needs of the Academy."[6]

The daily life of the Academy, I believe, fails to exhibit any patterns of behavior discernibly different from those displayed by other scientific academies. Nor should the failure to furnish it with official rules be considered anomalous. After all, the Académie Royale des Sciences received its statutes only in 1699, more than three decades after it had been founded. It should be borne in mind that in the absence of any accepted models of how best to organize and govern a scientific society, all seventeenth-century academies experimented as they went along. The Royal Society alone of these institutions felt the need to establish regulations from the start, partly because its meetings were public—i.e. not in the private residence of a benefactor or in a princely court—and thus rules governing admittance had to be formulated.[7] Moreover, in contrast to all other Continental academies, only the Fellows of the Royal Society were charged admittance and annual fees; hence the need for a more legally binding contract that would define both privileges and responsibilities of members. The public nature of the Royal Society also necessitated the appointment of a figurehead—in lieu of a convener like Prince Leopoldo—but initially, at least, the office was regarded as ceremonial, with "Presidents" elected on a monthly rotation. Only a Secretary—to take minutes, handle correspondence, and oversee publication—was considered essential for the organizational life of the first academies. As for the rest, it was generally expected that all members would contribute equally to the experimental labors of their respective institutions.

This expectation underscores the rationale behind the attempts of all early academies to carry out their investigations collectively, and publish their results anonymously. This was a strategic decision, however, not a function of princely arbitrariness. Publications were expected to be anonymous, experi-

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[6]Edward L. Goldberg, *After Vasari: History, Art and Patronage in Late Medici Florence* (Princeton: Princeton University Press, 1988), pp. 32–3 and 220 n. 129; Middleton, *The Experimenters*, pp. 56–7, 59–60.

[7]For other reasons informing regulations see Michael Hunter, *Establishing the New Science: The Experience of the Royal Society* (Woodbridge: Boydell Press, 1989), ch. 1.

mental in character, and free of speculations, in order to convey an image of a cohesive institution, whose members contributed equally and unselfishly to the common research agenda, irrespective of private philosophical commitments. Only anonymous publications, it was believed, could confer sufficient prestige on the institution and the chosen form of inquiry—and by extension, of course, on its patron—while at the same time rousing the membership to continue their contributions. Thus, projects that came to be known to posterity as Robert Hooke's *Micrographia* and John Evelyn's *Sylva*, were initially conceived as collective and anonymous publications, and the early publications of the Académie Royale des Sciences were equally anonymous. Significantly, however, insofar as the Cimento was concerned, beyond the specific work earmarked as common subject matter, no restrictions were made on members publishing their individual researches under their own names, and all active members of the Cimento availed themselves of this opportunity, invariably at the Medicis' expense. Thus, Viviani published his *De maximis, et minimis geometrica divinatio in quintum conicorum* (1659), while Carlo Rinaldini published the first part of *Ars analytica mathematum* (1665). For his part, Borelli proved far more prolific. Not only did he publish the Latin translation (from Arabic) of Books V–VII of Apollonius' *Conics*, but also *Euclides restitutus* (1658), *Theoricae Mediceorum planetarum ex causis physicis deductae* (1666), and *De vi percussionis liber* (1667).

Nor was the fate of the Cimento sealed once the *Saggi* appeared in print. Leopoldo was visibly distressed by the departure in 1667 of his most active academicians, and for at least a year he made strenuous efforts to replace them with savants of equal stature. He solicited several of his correspondents in Italy and Europe to recommend distinguished candidates—for example, by asking the Liège mathematician René François Sluse in May 1667 to recommend a suitable replacement for Borelli. Leopoldo also charged Magalotti with the task of recruiting any worthy savant that he met while traveling in Europe. Indeed, as late as 13 December 1667, a day after he had been created Cardinal, Leopoldo reiterated his wish that Magalotti search for suitable replacements for Borelli, Rinaldini, and Oliva, promising to confer on them lucrative positions at the University of Pisa. Ultimately, however, only Niels Steno was enlisted, but he was soon granted permission to embark on an extensive trip. Franciscus Sylvius declined an invitation, and nothing came of Magalotti's suggestion to recruit Adrien Auzout. By mid-1668 Leopoldo appeared resigned that the Academy was defunct.[8]

I might also correct two additional misperceptions that are used to substantiate the representation of the Florentine Academy as the creature of an absolute prince. First, that the appellation Cimento was conjured up only in

[8]W. E. Knowles Middleton, "Some Unpublished Correspondence of Lorenzo Magalotti in 1667 and 1668," *Studi secenteschi*, 20, (1979): 123–211, at 187 and n. 6, 189; Fabroni, *Lettere inedite*, 1: 295–6 and 309–11.

1666, when the Academy had already been moribund—having previously been known simply as Prince Leopoldo's Academy—as a strategic choice in the course of preparing the *Saggi* for publication. In point of fact, however, Francesco Redi and others used the label "Accademia del Cimento" in their correspondence as early as 1659.[9] Inaccurate also is the claim that Leopoldo made the *Saggi* available only in the form of a personal gift. In actuality, although many lavishly bound copies were bestowed on various dignitaries, other copies were assigned for distribution through the Amsterdam bookseller Pieter Blaeu, who even managed to block the publication of a projected pirated edition of the *Saggi*.[10]

To argue further that the Cimento ought not to be viewed as different either in kind or in practice from the Royal Society, I wish to expand the comparative framework in order to shed new light on the origins and subsequent career of the Cimento. Consider the genesis of both institutions. In England, as is well known, it was the convergence of like-minded individuals in both London and Oxford who began the private meetings and experiments that engendered the desire for more formal organization. A similar convergence had parallel results in Tuscany. According to Marcello Malpighi, it was the excitement generated by the extensive dissection and discussions following the arrival at Pisa of Borelli, Claude Aubry, Tilman Trutwyn, and Malpighi himself, among others, that fired the Medici brothers to institute a similar program at court, and then to establish the Cimento. However, whereas Malpighi credited Borelli with being the chief promoter of the Cimento, Rinaldini claimed the honor for himself. As he intimated to Michaelangelo Ricci upon leaving Pisa in February 1667, it was he (Rinaldini) who first persuaded Leopoldo to "undertake the experiments of natural things," which led to his being entrusted with the task of initiating the enterprise that ultimately became the Cimento.[11] Distribution of honor is obviously difficult—especially since Redi, too, boasted of his having been "one of the first founders of the famous Tuscan Accademia del Cimento"[12]—but it is clear that Leopoldo and Ferdinando were won over to the idea of establishing an academy rather than having willed it into being.

Concrete efforts to formalize such private gatherings were established during the second half of 1656, when Rinaldini was charged with the prepa-

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[9]*Opere di Francesco Redi*, 7 vols. (Naples, 1778), 14: 23.

[10]Goldberg, *After Vasari*, pp. 38 and 221–3. For Blaeu's relations with the Medicis, see *Pieter Blaeu: lettere ai Fiorentini: Antonio Magliabechi, Leopoldo e Cosimo III de' Medici, e altri : 1660–1705*, eds. Alfonso Mirto and Henk Th. Van Veen (Amsterdam: APA-Holland University Press, 1993).

[11]M. L. Bonelli, "The Accademia del Cimento and Niels Stensen," in *Steno and Brain Research in the Seventeenth Century*, ed. Gustav Scherz (Oxford: Pergamon Press, 1968), pp. 253–60, at p. 255.

[12]*Opere di Francesco Redi*, pp. 153–4.

ration of a comprehensive research program. The timing was the result of a confluence of events. Most important was the institution of Giovanni Alfonso Borelli as professor of mathematics in Pisa in early March 1656. Borelli's arrival coincided with the growing appreciation of the more tolerant attitude toward science—and learning more generally—in the aftermath of the election, the previous year, of Fabio Chigi as Pope Alexander VII. The mindset of the new pontiff was known to have been "completely alien to scholastic subtleties," and he was an admirer of Galileo to boot. Equally important, in sharp contrast to Urban VIII, Alexander held the Medicis in high esteem. This auspicious new intellectual temper in Rome made an active scientific life in Florence far easier than in the previous quarter of a century. Indeed, for the duration of Chigi's pontificate, relations between Florence and the Vatican were extremely close, with Leopoldo furnishing the technologically-inclined Pope with instruments, and with key figures in the Curia, such as Michaelangelo Ricci and Sforza Pallavicino, warmly endorsing the activities of the Cimento—with the understanding that the motion of the earth would never become an issue.[13]

Further to inspire Leopold's future academicians, I would like to suggest, was Isaac Barrow's sojourn to Florence, where he stayed from February to November 1656. During the previous five years Barrow had established himself as a leading mathematician and natural philosopher at Cambridge, but he thought it prudent to embark on an extended Continental tour in 1655, when his open advocacy of the Royalist cause rendered precarious his position at the University. At Cambridge, Barrow not only promoted in his public addresses the cultivation of the philosophies of Bacon, Gassendi, and Descartes—approving of the latter's mathematics and much of his physics, albeit criticizing the Frenchman's neglect of experiments—but he also participated in the work of the lively experimental club that was formed in Trinity College in the early 1650s. In Florence, Barrow is known to have established a particular friendship with Rinaldini; so, too, he spent considerable time working in Leopoldo's library, where he befriended Peter Fitton, the Prince's expert on numismatics, and in all likelihood he established contacts with Viviani and Borelli, both of whom shared Barrow's enthusiasm for ancient mathematicians, Apollonius and Euclid in particular.[14]

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[13]Fabroni, *Lettere inedite*, 1:227–8; G. Targioni Tozzetti, *Notizie degli aggrandimenti delle scienze fisiche accaduti in Toscana nel corso di anni LX del secolo XVII*, 4 vols. (Florence, 1780), 1: 265 and 465–6; II.i :337; Eric Cochrane, *Florence in the Forgotten Centuries, 1527–1800: A History of Florence and the Florentines in the Age of the Grand Dukes* (Chicago: University of Chicago Press, 1973), p. 245.

[14]Mordechai Feingold, "Isaac Barrow: Divine, Scholar, Mathematician," in *Before Newton: The Life and Times of Isaac Barrow*, ed. Mordechai Feingold (New York: Cambridge University Press, 1990), pp. 1–104, at 47–50.

The significance I attach to Barrow's visit lies in the possible opportunity it afforded him to apprise his Tuscan hosts of the activities of informal scientific associations in England, including his own experience in one such group. It is noteworthy that while Barrow resided in Florence, Rinaldini—who played a far more important role in the foundation and subsequent life of the Cimento than is commonly assumed—was busily preparing for Leopoldo a broad experimental program worthy of investigation, based in part on an extensive survey of both scholastic and modern treatises of natural philosophy.[15] Was it simply a coincidence that the Oxford Philosophical Club was inaugurated in a similar manner? Consider Seth Ward's 1652 account of the genesis of the Club:

> We have . . . gone over all or most of the heads of naturall philosophy & mixt mathematics collecting onely an history of the phenomena out of such authors as we have in our library and sometimes trieing experiments as we had occasion and opportunity. Our first businesse is to gather together such things as are already discovered and to make a booke with a generall index of them, then to have a collection of those which are still inquirenda and according to our opportunityes to make inquisitive experiments, the end is that out of a sufficient number of such experiments, the way of nature in working may be discovered, but because (not knoweing what others have done before us) we may probably spend out labour upon that which is already done, we have conceived it requisite to examine all the bookes of our public library . . . and to make a catalogue or index of the matters and that very particularly in philosophy physic mathematics.[16]

Obviously, I am not claiming that Barrow's visit was the catalyst for the foundation of the Cimento. I suggest only that Italian savants were aware of the scientific activities of their English (and French) counterparts, and such an awareness facilitated the organization and proceedings of the Cimento—just as reports regarding its own activities stimulated, in turn, the researches of members of the Royal Society (and the Académie Royale des Sciences).

An appreciation of such interactive awareness is important because the institutionalization of the Cimento was quite similar to that undergone by the English. There, organized science emerged as the combined work of interlocking groups—a large umbrella group under whose loose auspices there

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[15]For Rinaldini's list, dated 16 November 1656, see *Le opere dei discepoli di Galileo Galilei. Volume I. L'Accademia del Cimento. Part one* (Florence, 1942), 51–2. Virtually every early modern natural philosopher, including William Gilbert, Marin Mersenne, René Descartes, and Galileo Galilei—as well as ancient and modern atomists, from Lucretius to Sebastiano Basso and Pierre Gassendi—were included in the list.

[16]H. W. Robinson, "An Unpublished Letter of Dr. Seth Ward Relating to the Early Meetings of the Oxford Philosophical Society," *Notes and Records of the Royal Society*, 7, (1950): 68–70.

operated several smaller and more specialized clubs whose members were a subset of the larger group. Thus, in the letter cited above, Seth Ward proceeds to say that in addition to the "Great Clubbe" he describes, there existed a combination of smaller assemblies, such as the eight members who gathered together on a different day to carry out chemical experiments. Similarly, both before and after the Royal Society was founded, the mathematicians in the group met on their own every Monday, joining the meeting of the larger body two days later.

Applying such insight to Florence would clarify a certain confusion among scholars regarding the position of the Cimento vis-à-vis the broader context of science in the Tuscan Court. I suggest that we view the Cimento, under Leopoldo's leadership, as a specialized sub-group of the larger club that was overseen by Ferdinando. Such a division explains the almost exclusive concern of the Cimento with experimental physics, as well as the ease with which Borelli, for example, could demarcate his physico-mathematical researches carried out at the Palazzo Pitti from his biomedical experiments carried out at Court, or at his own private club in Pisa. But while all the Cimento academicians were an integral part of the larger group—and contributors to its activities—the relationship was not reciprocal. Even though the Cimento occasionally drew on the expertise of members of the larger group, these individuals, including Francesco Redi, were never real members of the Cimento.

The parity of corporate life between the Cimento and the Royal Society may be extended to the eventual fate of both institutions. As mentioned above, the departure of Borelli, Rinaldini, and Oliva in early 1667 precipitated a desperate scramble for suitable substitutes, which ultimately proved futile. The defection of the three members was the culmination of a protracted state of disarray among the academicians. Bitter rivalries and intense personal antipathies—especially toward the "intolerable" Borelli—became too difficult to manage, even by such a consummate leader as Leopoldo, and the trio went their separate ways. Deep divisions and personal antipathies became painfully visible within the Royal Society as well, so much so that by the mid-1670s it appeared as though the Society was on the verge of dissolution. What prevented the Royal Society from suffering the fate of the Cimento was its strength in numbers. Despite the fact that many members distanced themselves from the Society's activities, others could step in to take their places, and the Society always managed to recruit energetic new members that lifted the body out of its periodic doldrums.

The Cimento was not as fortunate. Its inability to find suitable mathematical physicists to carry on the specialized agenda of Leopoldo's Academy doomed it. Critical short staffing, however, would have probably doomed the Cimento even without the defection of three members, as the experimental basis upon which it was organized had been under pressure. Magalotti, for example, never cared much for experiments, and exhibited a marked disdain for soiling his hands. Indeed, the deeper he got into rendering the *Saggi* as a

literary masterpiece, the stronger became his disillusionment with science more generally. As he quipped upon hearing Cassini's theory of the 1664 comet, he "cared no more for comets than for rainbows."[17] Magalotti was not alone in losing faith in experiments, however. Carlo Dati's pugnacious allegorical essay on the "Utility and Delight of Geometry"—wherein he belittled the contribution of empirical investigation to the discovery of truth[18]—is undoubtedly indicative of a crisis in experimental life faced by the Cimento by the mid-1660s. The Royal Society confronted a similar crisis within a few years of its own foundation, when most members reneged on their duty to carry out experiments. But again, the Royal Society managed to maintain an experimental program for several decades, not only by virtue of its appointment of Hooke as curator, but because it could draw upon a far larger pool.

Given the similarity of the two institutions, how does one explain the absence of any relations between them, even when members of both institutions sought them out? For example, upon returning to England in late 1660, John Finch took it upon himself to establish a formal exchange between the Cimento and the Royal Society. As he informed Leopoldo on 18 January 1661, being cognizant of the Prince's disposition he had proposed to some of the most eminent "virtuosi" in London to enter into a correspondence with him. "As soon as I know that this is your pleasure," Finch continued, "I shall arrange it, for these people are more than ambitious of such an honor." Leopoldo responded encouragingly: "I am very glad that those scholars have begun to study in the book of nature in order to get to know the truth about things. As to the correspondence that you propose, it will greatly please me and be valuable in every way, and I offer to reciprocate their desire at once and always with every possible diligence."

Finch, who was elected Fellow around this time, read Leopold's letter on 8 May, and a flurry of activity ensued. A committee consisting of Viscount Brouncker, Robert Boyle, Sir Kenelm Digby, Sir Robert Moray, George Ent (then President), and Secretary William Croune was immediately formed, and charged with corresponding "constantly with that prince." They were expected to meet the following Monday at Brouncker's lodgings and "draw up an answer as soon as possible to the prince's letter." On 15 May, Moray informed the Society that he had apprised the king of Leopoldo's letter and the monarch granted the Society permission to respond to it. A week later, Finch was asked to "draw up a letter to be sent to prince Leopoldo." He evidently did so, for on 5 June it was ordered that the letter to Leopoldo, as well as a letter addressed to the Montmor Academy in Paris, "were both referred to the committee of correspondence." However, while Robert Moray's letter

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[17]Cochrane, *Florence in the Forgotten Centuries*, pp. 246–7 and 255.

[18]"Dissertazione di Carlo Dati, sull'utilità, e diletto che reca la Geometria," in Targioni Tozzetti, *Notizie degli aggrandimenti delle scienze fisiche*, II.i: 314–27.

to the Montmor was dispatched in July, nothing further is heard of the letter to Leopoldo, despite the fact that Finch informed the Prince on 9 June 1661 that the Fellows were flattered by his invitation to establish correspondence, and had ordered him (Finch) to write an official letter in Latin to that effect.[19]

Whereas Finch attempted to establish a correspondence between Leopoldo and the Royal Society, Robert Southwell sought to effect an epistolary exchange between the prince and Robert Boyle. Writing from Florence on 10 October 1660, Southwell related to Boyle his participation in several meetings of the Cimento and intimated that Leopoldo had "expressed so great a passion to be acquainted" with Boyle, that Southwell offered his services as mediator. He continued: "I am sure there will pass the communication of great secrets between you, although I do remember the prince told me, that they searched not so much after particular experiments, as those fundamental ones, that augmented the limits of nature." Southwell also enclosed a letter from Viviani, urging Southwell to introduce "a mutual correspondence between [England] and the philosophical Academy of the most Serene Prince Leopold on physical and philosophical matters founded on experiments made or to be made for finding our natural effects and for the discovery of the truth." Viviani added that both the Academicians and Prince Leopoldo were eager to establish such an exchange. Boyle did not to respond. Six months later, on 30 March 1661, Southwell wrote again, barely disguising his disappointment not only for failing to receive a response to his letter but for Boyle's failure to act on his suggestion: "I was in hopes, that long before this time there would have been a firm correspondence between you, for it is desired here; and on the other side I know you have no aversion to it, but rather a genius to confer with all persons, that are singular in their kinds." He then proceeded to inject a laconic statement that undoubtedly attested to his realization that Boyle was not favorably disposed to the idea: "There is certainly some unhappiness arrived in the business, and I am sorry for it."[20]

Southwell was shrewd to sense Boyle's reluctance to correspond with Leopoldo. In fact, I believe that Boyle's aversion to such an exchange also doomed Finch's efforts to establish a correspondence between the Royal Society and the Cimento. What informed such an aversion was Boyle's acute realization of the eerie resemblance of his research program to that of the Florentine Academy, and his unwillingness to impart his results to members of the Cimento. In fact, from an early date Boyle became consumed with fears that his experimental results would be plagiarized by others—including the Italians. Already in 1663 Boyle entreated readers of *Some Considerations touching*

[19]BNCF, MS. Gal. 276 fols. 2v, and 130r–v; Royal Society, MS MM.3 #84; Middleton, *The Experimenters*, pp. 287–8; Birch, *History of the Royal Society*, 1: 22–6 and 34–5.

[20]*The Correspondence of Robert Boyle*, eds. Michael Hunter, Antonio Clericuzio, and Lawrence M. Principe, 6 vols. (London: Pickering & Chatto, 2001), 1:428–34 and 451.

the Usefulnesse of Experimental Naturall Philosophy not to judge him harshly if some of the material in the book seemed familiar, on the grounds that he had written large portions of it much earlier, and his papers had circulated freely, so that "some things in them" may have "already been published by others." Two years later, in the preface to *New Experiments and Observations Touching Cold*, Boyle was more forceful in denouncing "the liberty that *some* have allow'd themselves in adopting my Communications," a practice, he wrote, "notorious enough to have been publickly complain'd of more than once, by Persons that are meer strangers to me." Boyle's mistrustful frame of mind may also be inferred from his willingness to entertain as true an account allegedly told him by an Italian visitor in early 1667 to the effect that the *Saggi* would have been published "long before, if it had not been perceived that some things of mine, that were already out, would, probably, keep divers of them from seeming new, or appearing so considerable as was hoped."[21]

In view of Boyle's attitude, it is hardly surprising that his creature, Henry Oldenburg, articulated similar notions and repeatedly disparaged the labors of the Florentines. Thus, as early as September 1660, Oldenburg informed a correspondent that he had received information from Paris regarding the Cimento trials "about the kindling [of] combustible matter in vacuo," which experiment, he added, Boyle claims "to know [and] to have experimented himselfe in a better and surer way." Seven years later, when Magalotti told him that the chief content of the *Saggi* involved air-pressure experiments—further intimating that had these experiments "been publisht 3. or 4. years agoe, [they] might perhaps appear new, but would hardly doe so now"—Oldenburg slyly commented in a letter to Boyle that it is easy to understand why Magalotti represented the book in such a manner, knowing all too well that in England "that Argument hath been so plentifully and accurately prosecuted." Boyle concurred: "I am apt to think you have rightly guessed at the reason of the preface they made you." In a subsequent letter Oldenburg informed Boyle that the visiting Italians presented their "pompous Book" to the Royal Society, and he understood that "there is nothing new in it, as to us, except it be perhaps some Experiments of Amber, and a way of making a Mapp of a Contry by Sounds.[22]

In 1667, when Magalotti visited Boyle in Oxford and encouraged Boyle to write to Leopoldo, Boyle admitted that Finch had invited him years earlier to "assume this honor," but absolved himself for failing to do so with the lame excuse that he had been unable "to bring himself to the point of writing with his own hand because of his infirmities, and not having anyone at hand to whom he could dictate in a language other than English." The true reason, I

[21]*The Works of Robert Boyle*, eds. Michael Hunter and Edward B. Davis, 14 vols. (London: Pickering & Chatto, 1999–2000), 3:195; 4:211; Boyle, *Correspondence*, 3:387.
[22]Boyle, *Correspondence*, 4:31, 33, and 46.

suggested above, lies elsewhere—though it is possible that Boyle's tempered anti-Catholicism further contributed to his resolve. Be this as it may, all that Boyle cared to do was to instruct Henry Oldenburg in October 1661 to dispatch to Florence, hot off the press, a copy of the Latin version of his *Spring of the Air* (*Nova experimenta physico-mechanica de vi aeris elastica*) and let the Cimento academicians fume.[23]

Boyle's sensitivity to priority, and his stature among members of the Royal Society, I suggest, were instrumental in preventing the English from establishing formal relations with Leopoldo's Academy. However, it is doubtful whether a durable exchange between the two institutions would have been possible in any case, for the Cimento was home to a member at least as zealous as Boyle to priority issues: Borelli. It is noteworthy that when informed by Ricci in November 1658 that Melchisèdec Thévenot wished to establish an epistolary exchange between the recently constituted Montmor Academy and the Cimento, Borelli responded that though he was pleased to learn that the French "are engaged in promoting natural philosophy with new experiments and speculations," he was opposed to the idea on the grounds that he had "some doubts and suspicions that, according to the ancient custom, the foreigners will make themselves the authors and discoverers of the inventions and speculations of our masters, and those that we ourselves have found." He would have undoubtedly regarded the Royal Society in similar terms. Certainly, having perused in July 1662 Boyle's *Spring of the Air*, Borelli articulated his great displeasure, "because there are many of our Academy's things in it."[24] Whether he thought that John Finch and his companion Thomas Baines, whom Borelli loathed, communicated the Cimento's experiments to Boyle is unclear, but Rinaldini, too, believed that the English and the French received credit for discoveries made by the Cimento academicians. Regardless, it was the arrival of Boyle's book in Tuscany that prompted members of the Cimento into frenzied action. On 31 July 1662, ten days after Borelli's complaint, members of the Cimento were invited to meet in Magalotti's house in order to discuss the matter of "repeating some experiments that appeared most necessary to the finishing of the work that is to be printed."[25] The *Saggi* was born.

Constraints of space prevent me from exploring further parallels between the Accademia del Cimento and the Royal Society. I have been unable to comment on the comparable manner in which members of both academies handled the complex relations between theory and experiment, or to elaborate

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[23]R. D. Waller, "Lorenzo Magalotti in England," *Italian Studies*, 1, (1937):49–66, at 58; Boyle, *Correspondence*, 1: 466–7.

[24]Middleton, *The Experimenters*, pp. 300 and 333.

[25]Bonelli, "The Accademia del Cimento and Niels Stensen," p. 255; Middleton, *The Experimenters*, p. 57.

on the personal dynamics that shaped their respective proceedings. Nor has it been possible for me to expound on the problematic nature of the propagandist manifestos that both institutions produced in 1667: Magalotti's *Saggi* and Sprat's *History of the Royal Society*. What I have done, I hope, is to impress the value of a comparative framework for the elucidation of the corporate life of the first two "modern" scientific societies, a framework that can be expanded to included subsequent institutions as well. To illustrate this relation, we may turn our gaze to Richard Waller's frontispiece to his 1684 translation of the *Saggi* into English. There, a rather despondent damsel, representing the short-lived Accademia del Cimento, presents a copy of the *Saggi* to the more mature and stately Royal Society, while *diva natura* draws Aristotle's attention to the passing of the mantle of experimental science, exemplified by the respective mottos of the Cimento and the Royal Society: "provando e riprovando" and "nullius in verba."